



1600 South Second Street
Mount Vernon, WA 98273-5202
ph 360.428.1617
fax 360.428.1620
www.nwcleanair.org

Air Operating Permit Excess Emissions Report Form Part II

Name of Facility	Shell, Puget Sound Refinery	Reported by	Tim Figgie
Date of notification	January 6, 2011	Incident type: breakdown/ upset/startup or shutdown	Breakdown
Start Date	January 6, 2011	Start Time:	12:30 PM
End Date	January 9, 2011	End Time:	7:45 AM
Process unit or system(s): Plantwide Outage			

Incident Description

On January 6, 2011 at approximately 12:30 PM a utilities failure on the Boiler House resulted in loss of plant instrument air and a large portion of the plant steam supply that shutdown all refinery process units. This resulted in excessive flaring and high sulfur readings on the SRU's, plant fuel gas system, HTU3 fuel gas system and the flare. Flare flow rates subsided at approximately 4:15 PM when the flare gas recovery unit was restarted.

The sulfur recovery unit also tripped out and had high SO₂ emissions above the 250-ppm SO₂ 12-hour average and the 1000-ppm SO₂ 1-hour average limits. Amine acid gas (AAG) was not flared during this event. The SRU3 was restarted on January 7 at approximately 4:00 PM prior to other process unit restarts. SRU4 was restarted on January 9 at approximately 7:45 AM.

The Cogen turbines remained operational although the duct burners did trip out. This, along with the loss of the Erie City and CO boilers, created a 600# steam failure. This caused the Cogen steam turbine to automatically lower itself offline to provide steam to the refinery to stabilize units. The steam turbine pressure dropped low enough that the NO_x control steam also tripped. This resulted in high NO_x readings on the three Cogen turbines.

An investigation into the cause of the trip indicated that a breaker on the 4 instrument air compressors tripped resulting in loss of instrument air to all units, which resulted in shutdown of the process units. The cause of the breaker failure could not be identified. To prevent a reoccurrence of this event the 4 instrument air compressors have been reconfigured to have the 4 compressors on 3 different breakers.

Immediate steps taken to limit the duration and/or quantity of excess emissions:

Utilities were restored as soon as practicable.

Applicable air operating permit term(s): 4.5, 4.11, 5.1.5, 5.1.7, 5.1.8, 5.2.3, 5.3.14, 5.3.15, 5.7.19, 5.7.20, 5.8.15, 5.9.3, 5.11.4; [Cogen: 4.21; 4.45]

Estimated Excess Emissions: Based on SO ₂ CEMS and calculated stack flow	Pollutant(s): SO ₂ & NO _x	Pounds (Estimate): SO ₂ : SRU-2974; Flare-10341; Fuel Gas-109. NO _x - 226.
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PSR0000542

The incident was the result of the following (check all that apply):

- ☐ Scheduled equipment startup
- ☐ Scheduled equipment shutdown
- ☐ Poor or inadequate design
- ☐ Careless, poor, or inadequate operation
- ☐ Poor or inadequate maintenance
- ☐ A reasonably preventable condition

Did the facility receive any complaints from the public?

- ☒ No
- ☐ Yes (provide details below)

Did the incident result in the violation of an ambient air quality standard

- ☒ No
- ☐ Yes (provide details below)

Root and other contributing causes of incident:

The root cause of this incident was a failed electrical breaker.

The root cause of the incident was:

(The retention of records of all required monitoring data and support information shall be kept for a period of five years from the date of the report as per the WAC regulation (173-401-615))

- ☒ Identified for the first time
- ☐ Identified as a recurrence (explain previous incident(s) below – provide dates)

Are the emissions from the incident exempted by the NSPS or NESHAP "malfunction" definitions below?

- ☐ No
- ☒ Yes (describe below)

The root cause of this incident was a failed electrical breaker.

Definition of NSPS "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 60.2

Definition of NESHAP "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 63.2

Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):

The 4 instrument air compressors have been reconfigured to have the 4 compressors on 3 different breakers.

Description of corrective action to be taken (include commencement and completion dates):

See above

If correction not required, explain basis for conclusion:

See above

Attach Reports, Reference Documents, and Other Backup Material as Necessary. This report satisfies the requirements of both NWCAA regulation 340, 341, 342 and the WAC regulation (173-400-107).

Is the investigation continuing?


☒ No ☐ Yes

Is the source requesting additional time for completion of the report? ☒ No ☐ Yes

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Based upon information and belief formed after reasonable inquiry, I certify that the statements and information in this document and all referenced documents and attachments are true, accurate and complete.

Prepared By: _ Renee Porter_ Date: _ January 10, 2011

Responsible Official or Designee:  Date: 1/21/11